

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 – 21. (Cancelled)

22. (new) A method for monitoring the response of a nervous system of a body to a stimulus, comprising collecting a set of voltage measurements between selected areas on a surface of the body whilst current is passed between selected regions of the surface of the body, wherein the set of voltage measurements is collected over a predetermined measurement period, the predetermined measurement period is initiated a predetermined time after application of the stimulus, and the collected voltage measurements are compared with reference measurements to determine normal or abnormal response of the nervous system.

23. (new) A method according to claim 22, wherein the set of voltage measurements is used to produce an image representing the distribution of impedance within the body.

24. (new) A method according to claim 22, wherein the stimulus comprises a series of stimuli, a set of voltage measurements is collected during current injection periods initiated after the application of each stimulus, the collection of voltage measurements related to each stimulus is initiated at a time delayed relative to the respective stimulus,

the time delay differs for each stimulus, and differences between collected sets of voltage measurements are interpreted as representing changes in nervous system activity over the time difference between the respective time delays.

25. (new) A method according to claim 24, wherein the set of voltage measurements is used to produce an image representing the distribution of impedance within the body and the images are compared to identify changes in nervous system activity.

26. (new) A method according to claim 22, wherein the applied stimulus is a visual or an auditory stimulus.

27. (new) A method according to claim 22, wherein measured voltage measurements are filtered using a Kalman filter.

28. (new) A method according to claim 22, further comprising applying the stimulus.

29. (new) A method according to claim 22 wherein application of the stimulus is detected, and said detection starts computation of the said predetermined time.

30. (new) A method according to claim 29, wherein the stimulus occurs spontaneously.

31. (new) A method according to claim 30, wherein the stimulus is a feature of an environment in which the body is located.

32. (new) A method for monitoring the response of a predetermined part of a nervous system of a body to an applied stimulus, comprising identifying the predetermined part of the nervous system, applying the stimulus, passing current between selected regions of a surface of the body, and collecting a set of voltage measurements between selected areas on the surface of the body whilst current is being passed, wherein the said regions and/or areas are selected on the basis of a neurological model of the nervous system and the applied stimulus such that sensitivity of the derived impedance measurements to changes in the predetermined part of the nervous system is maximised.

33. (new) A method according to claim 32, wherein the derived impedance measurements are compared with reference measurements to determine normal or abnormal response of the nervous system.

34. (new) A method according to claim 32, wherein the stimulus is a visual or auditory stimulus.

35. (new) A method according to any one of claim 32, wherein the set of voltage measurements is collected over a predetermined measurement period, the

predetermined measurement period is initiated a predetermined time after application of the stimulus, and the collected voltage measurements are compared with reference measurements to determine normal or abnormal response of the nervous system.

36. (new) An apparatus for monitoring the response of a nervous system of a body to an applied stimulus comprising means for applying the stimulus to the body, and means for collecting a set of voltage measurements between selected areas on a surface of the body whilst current is being passed between selected regions of the surface of the body, wherein the set of voltage measurements is collected over a predetermined measurement period, the predetermined measurement period is initiated at a predetermined time after application of the stimulus, and means are provided to compare the collected voltage measurements with reference measurements to determine normal or abnormal response of the nervous system.

37. (new) An apparatus for monitoring the response of a predetermined part of a nervous system of a body to an applied stimulus, comprising means for applying the stimulus, means for passing current between selected regions of the surface of the body, and means for collecting a set of voltage measurements between selected areas on the surface of the body whilst current is being passed, wherein the said regions and/or areas are selected on the basis of a neurological model of the nervous system and the applied stimulus such that the sensitivity of the derived impedance measurements to changes in the predetermined part of the nervous system is

maximised.

38. (new) A method of diagnosing a brain dysfunction, comprising applying a stimulus to a patient, and collecting a set of voltage measurements between selected areas on a surface of the patient's head while current is being passed between selected regions of the surface of the body, wherein the set of voltage measurements is collected over a predetermined measurement period, the predetermined measurement period is initiated at a predetermined time after application of the stimulus, and the collected voltage measurements are compared with reference measurements to determine normal or abnormal response of the nervous system.

39. (new) A data carrier carrying computer program code means to cause a computer to execute procedure in accordance with the method of claim 22.

40. (new) A computer apparatus comprising:
a memory for storing processor readable instructions;
a processor for reading and executing instructions from said memory;
wherein said memory comprises instructions to cause the processor to execute the method of claim 22.